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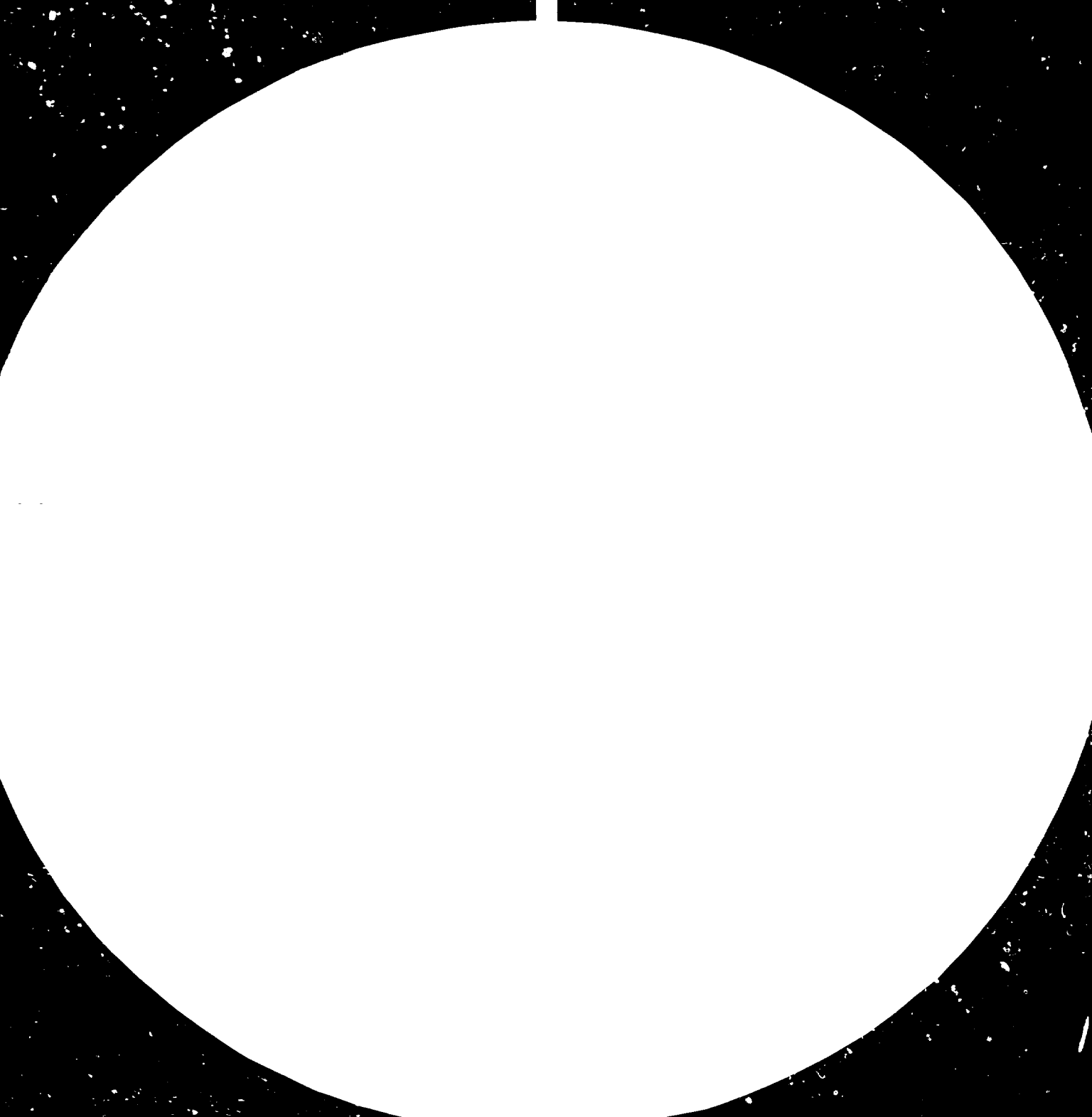
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THE DEVELOPMENT OF THE CEMENT AND CONCRETE  
PRODUCTS INDUSTRY IN THE STATE OF QUEENSLAND\*  
(including an outline of Governmental assistance  
to industry and its relation to decentralization.)

by  
B.J. Hughes\*\*

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The use of cement and concrete products in Queensland can be traced to the early days of this century and these industries have formed the backbone to much of the development which has occurred since that time. The numerous large-scale projects which have been undertaken in recent decades have relied upon the availability of cement and concrete products in the construction of both building and infrastructure in the way of roads, bridges etcetera. The demand for these products has as a consequence helped to expand the supply industries which have evolved from small dispersed operations to large-scale highly automated businesses.

Queensland is now one of the fastest growing States of Australia in terms of population, employment, income and production. This achievement, in a mixed economy, is based on a policy of development of the State's primary, secondary and tertiary sectors in such a way as to maximize returns through efficiency in resource allocation.

There is a wide range of industry in Queensland. As well as industries based on supplying the domestic market, a considerable boost to the Queensland economy has been provided by those based on Queensland's extensive and varied endowment of natural resources. Backed by the availability of competitively priced energy and a sound economic climate, although characterized by an inflation rate of around nine percent, these industries export their output to both the interstate and overseas markets. The development of these resource-based industries has, in turn, spawned a large number of firms which produce to satisfy the specific needs of the resource-processing sector as well as an expanded consumer market in the resource areas.

The cement requirements of Queensland industry are supplied by plants located approximately equidistant along the eastern seaboard. However, in the early days prior to World War I, Queensland imported all its cement requirements from interstate and overseas. The first locally produced cement was manufactured in 1917, at Darra, a western suburb of Brisbane. This plant, owned by The Queensland

Cement & Lime Company Limited, has remained the largest producer within the State, with output rising from an initial 36,000 tonnes to its current level, which is almost twenty times as much.

The Queensland Cement & Lime Company Limited was, itself, instrumental in the establishment of the two other manufacturers, one in Central Queensland and one in North Queensland. In addition, the company established a clinker grinding plant at Bulwer Island at the mouth of the Brisbane River. This plant is, at present, using imported clinker but this will be soon replaced by output from the company's new facility at Gladstone which should be operational within the next few months.

The main market outlets for cement are the ready-mixed concrete industry and the concrete products industry. Of note, too, is cement usage by the manufacturers of calcium-silicate bricks and the sole manufacturer of asbestos-cement products. The domestic and construction markets are other end-users of cement.

I should like to outline the cement industry in more detail, then discuss the structure of the concrete products industry and finally tell you a little about incentives offered to manufacturing industry in Queensland by the State Government.

The location of cement plants within Queensland has been largely determined by the availability of the raw materials required in cement production. As demand increased, it became economically feasible to expand the number of plants in line with market areas.

The raw materials generally used in the manufacture of Portland cement are, as you are probably aware, calcium carbonate in the form of limestone or coral, silica in the form of sand, alumina as clay, gypsum and ironstone.

Queensland has vast resources of high quality limestone most of which are organic in origin. Deposits are widely scattered throughout the eastern areas of the State, particularly along the coastline. The greatest concentration lies in a 150-kilometre stretch between Gladstone and Rockhampton in Central Queensland. Large quantities exist also in the belt of ancient rocks to the north-west

of the State. However, no important mineral deposits of limestone are known within 100 kilometres of Brisbane. As limestone or coral is the main component of cement, the associated transport costs are an important factor in cement production costs. Readily-available supplies are essential to economic production.

Clay or shale, sand and ironstone are usually available from local sources, while gypsum is imported from South Australia.

Some source of power is required for heating the kilns and the choice of coal by existing plants in Queensland is purely one of local economics. Central Queensland limestone deposits coincide with important coal fields, the high class semi-anthracites of Bluff and Baralaba being especially significant. The Darra cement works are close to the Moreton coalfields while the Townsville plant is supplied by coal from the Bowen Basin.

As mentioned earlier, there are three plants operating in Queensland, namely:-

1. The Queensland Cement & Lime Company Limited, Brisbane;
2. North Australian Cement Ltd., Townsville; and
3. Central Queensland Cement Pty. Ltd., Rockhampton.

These plants have been augmented by a 500 000 tonne per annum semi-wet clinker plant in the Gladstone area, which is expected to come on stream a little later this year. The clinker project includes a limestone mining operation and has been designed to cater for a doubling in capacity when demand increases sufficiently. The clinker will be sent to the grinding plant at Bulwer Island, which was established by The Queensland Cement & Lime Company Limited in 1976.

The Queensland Cement & Lime Company Limited, the oldest and largest of the cement works, was formed in 1914 but did not become operational until 1917, owing to wartime disturbances. Initially, the main cement ingredient, calcium carbonate, was obtained from limestone deposits at Gore, near Warwick. However, from 1935 it was gradually replaced by coral dredged from Moreton Bay. These coral deposits have been found to be extensive and uncontaminated by mud or sand. A conveyor belt system is now used to carry the dredged material from the Oxley wharf on the Brisbane River to the plant, a distance of over three kilometres.



Originally, The Queensland Cement & Lime Company Limited supplied cement throughout Queensland but in 1954, North Australian Cement Ltd. was established at Stuart, an industrial suburb of Townsville. The new plant was set up under the guidance of the former company, which subscribed a significant portion of the share capital required. Shareholding by The Queensland Cement & Lime Company Limited now amounts to 43 percent.

As a further move in decentralization a cement works to supply the Central Queensland market was erected at Parkhurst on the outskirts of Rockhampton. This company, Central Queensland Cement Pty. Ltd. is jointly owned by The Queensland Cement & Lime Company Limited and North Australian Cement Ltd., 75 percent and 25 percent shareholding respectively.

All three companies manufacture the normal Portland cement, but no special high alumina or white cements. The latter are imported in small quantities for specialist use. Queensland is divided into three main market areas; north, central and south, which are supplied by the cement works located in each region.

From a production level of 36,000 tonnes per annum, Queensland's total output has now risen to in excess of one million tonnes per annum. In fact, during the past twenty years cement production and sales in Queensland have grown fairly consistently at about 6.5 percent per annum and plant capacities have been upgraded in line with this increasing demand. At the end of this year, total plant capacity will approximate 1.5 million tonnes per annum.

According to the latest available official statistics in 1978-79 there were 269 establishments in Queensland manufacturing cement and concrete products. The majority is accounted for by the numerous ready-mixed concrete plants, which are dispersed throughout the State. The economic advantage of pre-mixed concrete has been fully recognised by local companies, which are able to produce cost savings in labour, cement usage and turnaround by adopting this product. The ready-mixed concrete companies often enhance their profitability by integrating their operations with associated quarrying and constructional activity.

Of the remaining establishments and considering those employing more than four persons, 15 were in the manufacture of box culverts and concrete pipes for use in irrigation, sewerage and

drainage, while 77 establishments made other concrete products, notably concrete blocks.

The concrete products industry is, in fact, represented by manufacturers of a diverse range of products including concrete pipes, blocks and bricks, paving and roofing tiles, railway sleepers and telegraph poles as well as prestressed and precast concrete products for the "civil" and "architectural"\* markets. Some of the smaller manufacturers, especially in provincial areas, make a number of concrete items geared to the house and garden markets; items such as garden edgings, planter pots, water troughs, water and septic tanks.

Although there are a surprising number of very small-scale businesses which have survived, the general trend in the concrete products industry has been towards large highly-automated plants with diminishing employee numbers. The reason for the viability of the small manufacturers is that, with far lower administrative costs and a high degree of product flexibility, they can compete with the larger concrete product companies and often supply items not made by the latter.

The general trend from small dispersed operations employing only a few persons to more centralized production is well illustrated by the concrete block industry. At the heart of a typical small provincial blockworks of the 1960's was a one or two-man blockmaking machine. The names of Koyo, Columbia, Kinugawa and later Jeffco, the Queensland-made machine, were familiar. In addition to this basic plant, all that was required was the raw materials, moulds, pallets for stacking and drying, storage facilities and a means of transporting the finished product.

Although industry sources indicated that 70 to 80 percent of the State's total concrete block usage in the mid-1960's was used in non-residential construction, building material usage varied considerably on a regional basis. Especially in northern regions of Queensland, the proportion of houses utilizing concrete block was considerably higher than the State average.

\* Footnote: The "civil" market encompasses large beams, girders, piles and decks used essentially in bridge construction while the "architectural" market embraces wall cladding and panels for high-rise buildings.

In addition to residential construction, concrete blocks have been widely used in extensions and improvements to houses, including decorative screen walls, garages, house basement and outdoor barbecue areas. Concrete block usage was also notable on rural properties for such purposes as storage sheds, pig pens and dairies while in public reserves, recreational facilities and toilet blocks were often constructed of this material.

A locally-produced building material benefits from the cost advantage provided by minimizing the freight component as compared to materials imported into the region, and also because its availability tends to promote repair work which would probably have otherwise been neglected.

As demand for concrete blocks grew in Queensland, the industry began to establish larger plants, especially along the coastal fringe. Of the smaller-sized plants still in existence the advantages outlined earlier still hold true but because of the comparatively lower unit costs of production of the large producers, it is quite common to find that these smaller manufacturers operate some other business in conjunction with blockmaking. Blocks are sometimes made on an intermittent basis, when time permits or higher demand is evident.

The growth in demand for concrete blocks in Queensland increased tenfold over the decade to 1969-70. However, this is from the extremely small base level of 1.2 million blocks. Since 1970-71 the average growth has exceeded 8 percent per annum, although variations from this average have occurred both over time and for particular regions.

Traditionally, concrete blocks have found greater favour in the northern regions of the State. This has been a reflection of both the lack of readily available alternative building materials as well as the lower cost of concrete blocks. The Brisbane statistical area is, now, absorbing a declining proportion of the industry's block output. The reason is the predominance of clay bricks for housing construction as well as the increasing use of prestressed and precast concrete components in the multi-storey residential and commercial construction.

Rationalization of production has also occurred for concrete products other than blocks, the most obvious being concrete tiles.

For the future, the 1980s promise to be a decade of unprecedented economic development for Queensland based on the natural resources and related fields. The infrastructure needs of these developments and the associated growth in services will be likely to directly benefit the building and construction industries, which are the mainstay of the cement and concrete products industries. The optimism shown by this industry sector appears to be well founded.

#### Decentralization and Government Assistance

The Cement and Concrete Block Industry is one which is decentralized basically as a result of the heavy weight-to-value ratio of the raw materials. It is too costly to transport the inputs over large distances. The same applies to a certain extent to the finished product although at this stage, economies of scale can be quite considerable.

Much of Queensland's industrial development has evolved in a decentralized pattern as a result of both geographical features and historical events. The Queensland Government has supported such decentralization in a desire to provide employment opportunities throughout the State and to avoid problems which can occur with highly-centralized development.

The Queensland State Government through the Department of Commercial and Industrial Development has actively promoted all forms of industrial development throughout the State. To assist industry, manufacturers in Queensland are offered a range of incentives. These incentives, while available to all manufacturers both new and established, are geared to provide greater assistance to non-metropolitan or decentralized operations.

The incentives offered to manufacturers relate to the provision of land, factory buildings, financial assistance, freight rebates and certain other concessions.

Probably the most successful of these incentives has been the provision of industrial land, which is made available on very reasonable terms and conditions. Crown Industrial Estates have been established in most major centres throughout Queensland. There are seven such estates within the metropolitan area while a further thirty-nine are located in provincial areas. Annual rental to those on the estates is assessed on the basis of three percent of the unimproved

value of the land. In addition, it is possible to convert such holdings to perpetual lease or freehold provided certain conditions are met.

The Government will also consider constructing factory buildings for industries of a "pioneer" nature. "Pioneer" refers to those industries which are the first of their kind in a place or locality or, alternatively, will be producing items for which there is an unsatisfied demand. Building rental is also attractively low ranging from 7.5 percent of the building cost in provincial areas to 10 percent in the metropolitan area.

Financial assistance to pioneer-type industry is available in certain conditions. Such assistance is usually in the form of loan guarantee, although occasionally a direct loan advance has been given. The latter is not very common.

Loan guarantees are generally more readily available to those manufacturers who are located in provincial areas. While assistance to metropolitan industry is limited to 66<sup>2</sup>/<sub>3</sub> percent of the value of fixed assets available as security, for those in decentralized areas the upper limit may be as high as 90 percent of the value of land and buildings required for the project.

Numerous freight concessions are available to manufacturing industry establishing in Queensland. It is possible to negotiate concessional rail freight rates on both raw materials and finished products provided an acceptable volume of freight is involved. Also, a portion of the costs of moving machinery and equipment required for the establishment of a pioneer-type industry outside the metropolitan area is refundable by the Department. Costs up to a maximum of \$5,000 for any one project are met, provided the imported items are not available from local sources. Existing industry may be eligible for this concession if a substantial increase in employment will be generated by the expansion of operations and no harm will ensue to other businesses already established within the region.

Other incentives offered relate to assistance in transport costs for those producing for the export market who are more than 40 kilometres from the nearest export port. A similar scheme operates if the market is interstate.

Another important facet in Government assistance to Queensland industry is the local preference scheme which applies to its own purchasing programme. Decentralized manufacturers are given a five percent preference over industry located in the Brisbane Statistical Division. In addition, a further ten percent preference is given to Queensland industry in comparison to interstate tenderers.

Finally, the Department is very active in liaising with all sectors of industry in Queensland and offers advice to those considering establishment or expansion of manufacturing activity within the State. Locally manufactured goods and services are strongly promoted by the Department.

